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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/534,521	05/11/2005	Dong-Hyun Seo	673-27 PCT/US	5082
7590 R Glenn Schroeder Hoffmann & Baron 6900 Jericho Turnpike Syosset, NY 11791				
09/03/2008				
EXAMINER				
MAYO, TARA L				
ART UNIT		PAPER NUMBER		
3671				
MAIL DATE		DELIVERY MODE		
09/03/2008		PAPER		

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary

Application No.

10/534,521

Applicant(s)

SEO ET AL.

Examiner

TARA L. MAYO

Art Unit

3671

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 24 April 2008.
2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-18 is/are pending in the application.
4a) Of the above claim(s) 1-9 and 18 is/are withdrawn from consideration.
5) ☐ Claim(s) _____ is/are allowed.
6) ☒ Claim(s) 10-17 is/are rejected.
7) ☐ Claim(s) _____ is/are objected to.
8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
10) ☒ The drawing(s) filed on 11 May 2005 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-8508)
Paper No(s)/Mail Date _____
4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date _____
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____

DETAILED ACTION

Priority

1. Receipt is acknowledged of papers submitted under 35 U.S.C. 119(a)-(d), which papers have been placed of record in the file.

Election/Restrictions

2. Claims 1 through 9 and 18 are withdrawn from further consideration pursuant to 37 CFR 1.142(b) as being drawn to a nonelected invention, there being no allowable generic or linking claim. Election was made **without** traverse in the reply filed on 24 April 2007.

Claim Rejections - 35 USC § 112

3. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

4. Claims 12 through 16 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

With regard to claim 12, the scope of the claimed invention is indefinite. Specifically, it is not clear how the "central tunnel" relates to the rest of the claimed invention; for example, whether the claimed "central tunnel" is one of the tunnels included in the previously recited three arch excavated tunnels or a separate part of the claimed invention. Furthermore, it is unclear what is meant by "penetrates a central

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tunnel"; for example, whether the intermediate wall separates the central tunnel into two separate chambers or essentially forms a wall of the recited "central tunnel." Claim 15 is similarly rejected.

With regard to claim 13, the scope of the claimed invention is indefinite. Specifically, it is not clear if the step of draining is performed during the step of casting lining concrete or after the intermediate wall is cured and in place.

With regard to claim 14, the scope of the claimed invention is indefinite because it is unclear what is meant by "flows along openings and then comes down." Specifically, it is not clear where the openings are located in relation to the reduced or cut areas. It is also not clear from where the water comes from and to where it flows.

With regard to claim 15, it is unclear what limitation Applicant is attempting to recite with "an effective structure." Specifically, what is the structure effective to do? With further regard to claim 15, it is unclear what is meant by "designated portions of lock bolts having a length corresponding to length joints are exposed in advance and then buried." Specifically, it is not clear how the lock bolts relate to the rest of the claimed invention, what is meant by the term "length joints", to what the bolts are exposed in advance, and how they are buried. Claim 16 is similarly rejected.

Claim Rejections - 35 USC § 103

5. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

6. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

7. Claims 10, 11 and 17 are rejected under 35 U.S.C. 103(a) as being unpatentable over Hand et al. (U.S. Patent No. 2,806,277 A) in view of Schuppisser et al. (U.S. Patent No. 3,482,406 A).

Hand et al. '277 disclose a method for constructing an intermediate wall of an excavated tunnel, the intermediate wall having an upper fixing type structure:
with regard to claim 10,

in which lining concrete is cast and fixed to an upper side of the intermediate wall, a lower portion of the intermediate wall has a small thickness reduced as much as the thickness of the lining concrete, and the lower portion of the intermediate wall is one type selected from the group consisting of a column type, an arch type and an intermediate wall type (Claim 1).

Hand et al. '277 fail to teach the excavated tunnel being a three arch excavated tunnel.

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Schuppisser et al. '406 teach methods of forming arch-shaped, load supporting structures (col. 4, lines 95 through 96) from prefabricated parts or either cast in situ (col. 1, lines 14 through 20).

It would have been obvious to one having ordinary skill in the art at the time of invention to modify the method disclosed by Hand et al. '277 such that it would be used to construct an intermediate wall of a three-arch excavated tunnel as taught by Schuppisser et al. '406, since the three-arch tunnel is known in the art and the modification would merely involve the use of a known method on a known structure and would have had a reasonable expectation of success; and with regard to claim 11,

wherein the intermediate wall having the upper fixing type structure is a cast-in-place type intermediate wall and a steel plate girder type intermediate wall.

With regard to claim 17, it would have been obvious to one having ordinary skill in the art at the time of invention to modify the method disclosed by Hand et al. '277 and Schuppisser et al. '406 such that it would include pipe holders and utility pipes installed in the steel plate girder type or precast concrete type intermediate wall, since it is a well known expedient to provide concrete structures with both pipe holders and utility pipes to allow for the passage of utility conduits.

Allowable Subject Matter

8. Claims 12 through 16 would be allowable if rewritten to overcome the rejection(s) under 35 U.S.C. 112, 2nd paragraph, set forth in this Office action and to include all of the limitations of the base claim and any intervening claims.

9. As allowable subject matter has been indicated, applicant's reply must either comply with all formal requirements or specifically traverse each requirement not complied with. See 37 CFR 1.111(b) and MPEP § 707.07(a).

Response to Arguments

10. Applicant's arguments, see the Remarks, filed 24 April 2008, with respect to the rejection(s) of claim(s) 1 through 17 under 35 USC §102(e) have been fully considered and are persuasive. Therefore, the rejection has been withdrawn. However, upon further consideration, a new ground(s) of rejection is made in view of Hand et al. (U.S. Patent No. 2,806,277 A) in view of Schuppisser et al. (U.S. Patent No. 3,482,406 A).

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to TARA L. MAYO whose telephone number is (571)272-6992. The examiner can normally be reached on Monday through Friday 8:30 AM to 5:00 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Thomas B. Will can be reached on 571-272-6998. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/TARA L MAYO/
Primary Examiner, Art Unit 3671

tlm
01 September 2008